

Asparagus

- 1. In what food sources is vitamin E found? What are the eight common forms in which vitamin E occurs?**

Primary-level response:

Vitamin E is found in the following food sources: nuts, oils, seeds, wheat germ, whole grains, and peanut butter. Vitamin E is a collection of eight different, but closely related, compounds.

Secondary-level response:

Vitamin E is found in the following food sources: nuts, oils, seeds, wheat germ, whole grains, and peanut butter. Vitamin E is a collection of eight different, but closely related, compounds. These are alpha-, beta-, gamma-, and delta-tocopherol and alpha-, beta-, gamma-, and delta-tocotrienol. Each of these compounds has a different degree of activity in humans.

- 2. Asparagus is a source of many vitamins, including both water-soluble and fat-soluble vitamins. Make a list of these water-soluble and fat-soluble vitamins found in asparagus. How does each vitamin function in your body? Identify your Recommended Daily Intakes (RDI) for these vitamins. Make a list of foods that are good or excellent sources for each vitamin.**

Primary/Secondary-level response:

Fat-soluble vitamins found in asparagus include vitamins A, E and K.

Water-soluble vitamins found in asparagus include thiamin, niacin, riboflavin, vitamin C, and folate.

Vitamin	Food Sources	Function
Vitamin A	Carrots, pumpkin, sweet potatoes, dark leafy greens, spinach	Helps maintain good vision, fight infections and keep skin healthy
Vitamin E	Nuts, oils, seeds, wheat germ	Protects the bodies cells
Vitamin K	Asparagus, broccoli, collard greens, kale and spinach	Helps stop cuts and scrapes from bleeding too much and starts the healing process

Thiamin	Fortified whole grain cereal, lean pork, lentils, peas and pecans	Helps keep the bodies nerves healthy
Niacin	Grains, meats, eggs, legumes, nuts and seeds	Produces energy from food, healthy skin and nerves
Riboflavin	Lowfat milk, mushrooms, spinach, whole grain cereals, and zucchini	Helps turn food into energy
Vitamin C	Bell peppers, broccoli, citrus fruits, cantaloupe, cauliflower, kiwifruit, and strawberries	Helps the body heal cuts and lowers the risk of infection
Folate	Avocados, black eye peas, broccoli, fortified cereals and breads, okra, oranges, asparagus, spinach	Helps make healthy red blood cells and lower risk of certain birth defects

	All kids, age 4-8	Boys, age 9-13	Boys, age 14-18	Girls, age 9-13	Girls, age 14-18
Vitamin A (mcg/d)	400	600	900	600	700
Vitamin E (mg/d)	7	11	15	11	15
Vitamin K (mcg/d)	55	60	75	60	75
Thiamin (mg/d)	0.6	0.9	1.2	0.9	1.0
Niacin (mg/d)	8	12	16	12	14
Riboflavin (mg/d)	0.6	0.9	1.3	0.9	1.0
Vitamin C (mg/d)	25	45	75	45	65
Folate (mcg/d)	200	300	400	300	400

Source:

<http://iom.edu/Activities/Nutrition/SummaryDRIs/~media/Files/Activity%20Files/Nutrition/DRIs/EAR%20Table.pdf>

3. Record your food intake for one day. Determine if you are eating enough fat-soluble and water-soluble vitamins. (Hint: Use the Pantry tool available at www.nutritiondata.com to record your meals and assess nutrient intake.)

Student responses will vary; charts found in above answer will help students determine if they are getting enough fat-soluble and water-soluble vitamins.

4. White asparagus is grown from the same grown as green asparagus. Research how farmers grow the white variety. Hypothesize what process occurs (or does not occur) to make the white variety. Identify on a map the regions that produce white asparagus. Compare and contrast nutrient values for white and green asparagus.

Primary/Secondary-level response:

- Farmers grow white asparagus by burying the crowns with about one foot of soil (or shielding the crowns from sunlight) so that the spears are completely covered as they grow.
- This prevents photosynthesis from occurring – a process in which the plant develops chlorophyll causing the stems to turn green.
- White asparagus is mostly grown in colder and/or coastal climate regions like that of northern Europe and along the coastline of Northern California (Monterey County).
- Refer to Nutrition Fact labels (available on www.nal.usda.gov/fnic/foodcomp/search/; use ½ cup serving size) for nutrient similarities and differences:
 - Similarities: Calories, fat, carbohydrates, protein, sodium, cholesterol, fiber, and sugar.
 - Differences: White asparagus has more potassium and Vitamin C; green asparagus has more Vitamin A, calcium, and iron.

Sources:

Dietary Reference Intakes (DRIs): Recommended Intakes for Individuals, Vitamins, Food and Nutrition Board, Institute of Medicine, National Academies, 2006.

www.cfaitc.org

www.calasparagus.com

www.nal.usda.gov/fnic/foodcomp/search/

<http://jn.nutrition.org/nutinfo/>

<http://iom.edu/Activities/Nutrition/SummaryDRIs/~media/Files/Activity%20Files/Nutrition/DRIs/EAR%20Table.pdf>

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